The Global Market Initiative (GMI) for Concentrating Solar Power (CSP)

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ASES Conference
Portland, OR
13 July 2004

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Concentrating Parabolic Trough Technology

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Concentrating Parabolic Trough Technology

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Concentrating Solar Tower Technology

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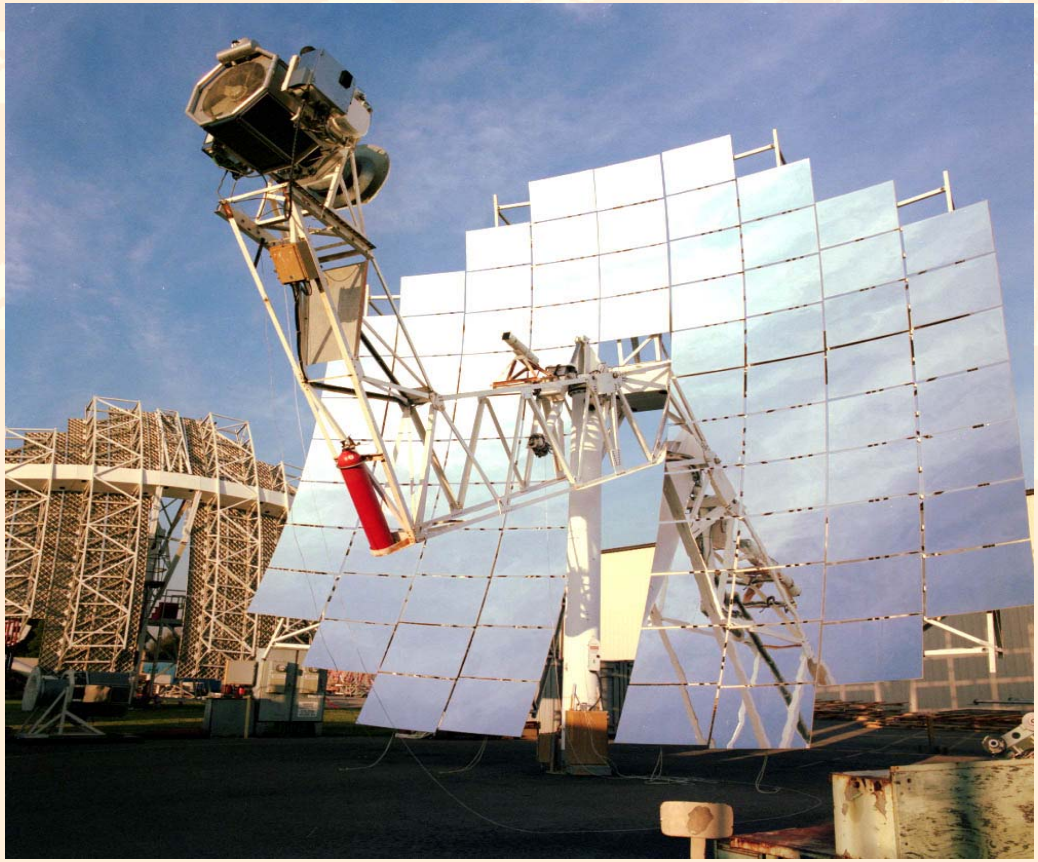
Concentrating Parabolic Dish Technology



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CSP – The Other Solar Electric Option

- All concentrate the solar energy to produce steam or electricity directly (dish engine)
- Utility scale – 50 MW and larger
- Lowest cost and largest bulk power producer in the world
- 354 MW working reliably for 15 years
- Produced over 50% of all solar electricity to date
- Firm dispatchable power via hybrid or thermal storage
- Could help meet future capacity requirements and reduce reliance on imported fuels

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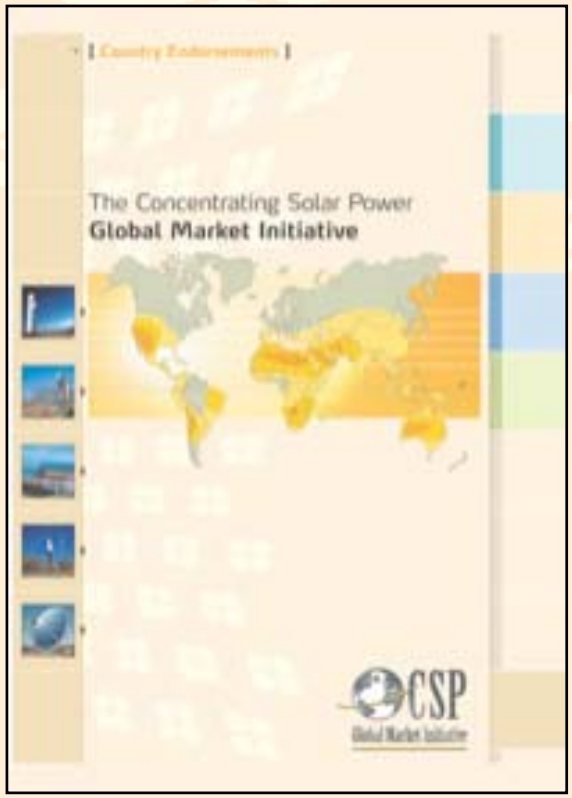
Goals of CSP Global Market Initiative



- The objective is to facilitate and expedite the building of 5,000 MWe of CSP worldwide over the next 10 years.

- CSP industry committed to reduce the investment costs of CSP by 50%, thus becoming fully competitive with fossil based mid-load power

- This represents an investment volume of $10 billion - mainly privately financed

- This initiative will represent the world's largest single program in history for solar electricity.

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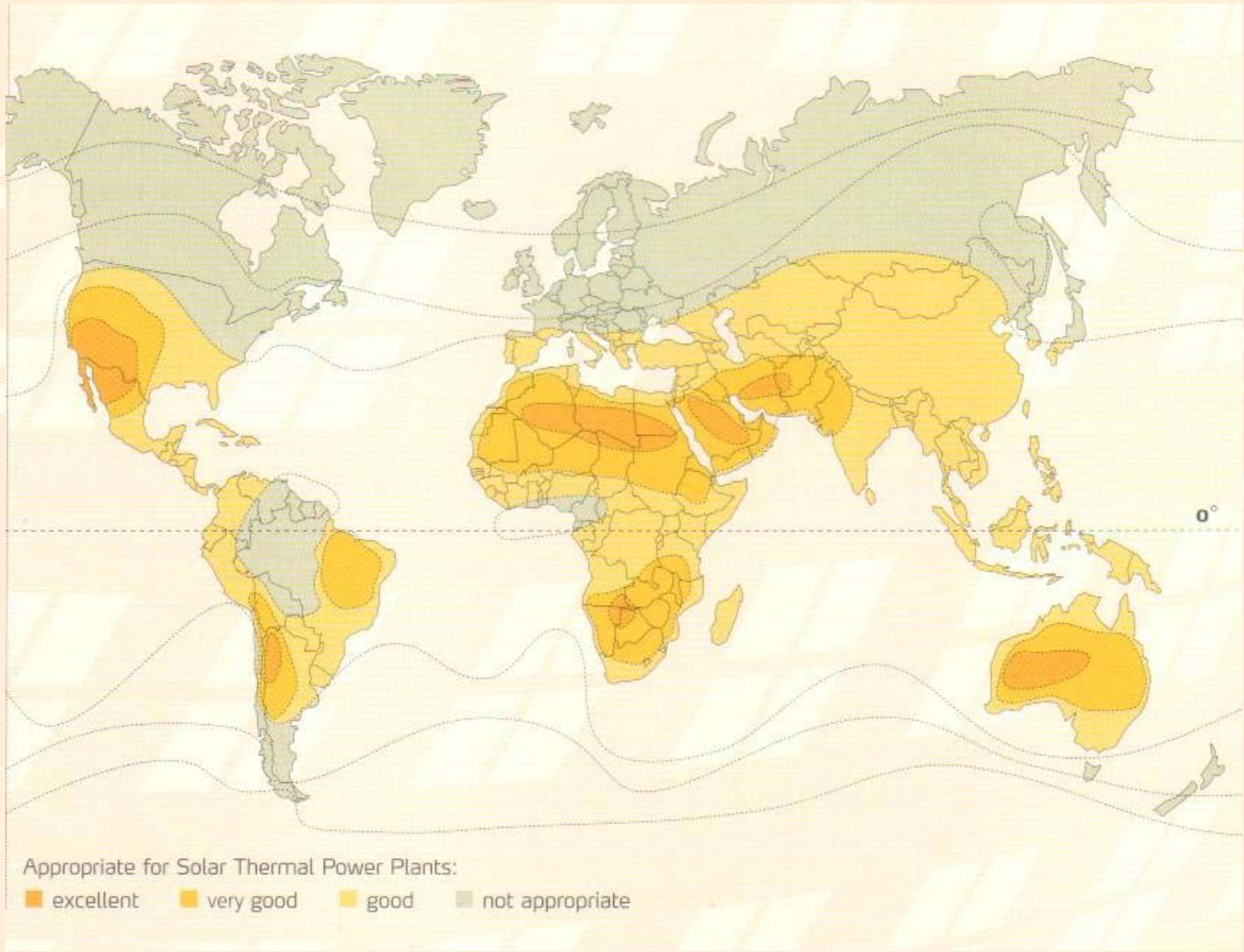

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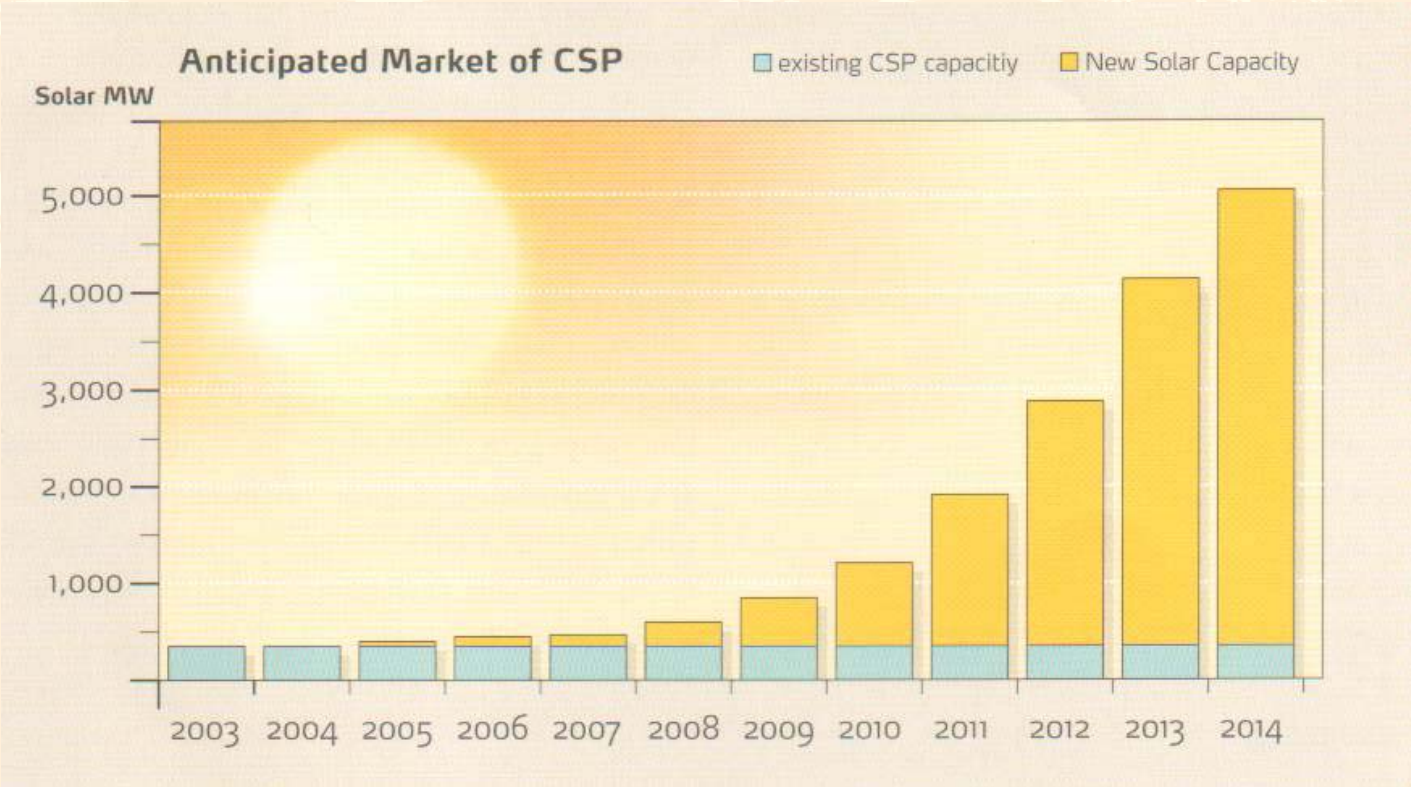

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Process

- The Idea – Kearney and Morse in 2001, initial work supported by small GEF grant
- Conference In Berlin, Germany in 2002 hosted by the German Ministry for the Environment, the German Development Bank, UNEP and GEF
- Conference in Palm Springs, California in 2003 hosted by same plus US DOE the CEC on the invitation of the Governor
- Renewables 2004 Conference in Bonn, Germany in 2004

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Required Policy Framework

- To make the needed long-term investments to achieve lower **costs,** a visible, reliable and growing market for solar thermal power, with normal risk levels, must be established

- The three policy areas that will have greatest impact on that objective are:

  - **Targets and Tariffs**
  - **Regulations**
  - **Financing Mechanisms**

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Targets and Tariffs

Countries and states participating in the CSP GMI should:

- **Establish a consistent base of national laws and regulations, such as adequate feed-in tariffs or public benefit charges specifically for CSP.**
- **Establish Renewable Portfolio Standards or similar mechanisms that encourage electricity generation from renewables, specifically CSP.**
- **Make green tariff schemes or certificates applicable to electricity imports from high solar radiation areas in neighboring states and/or countries.**

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Regulations

- Avoid limitations on CSP plant capacity or operating strategies that make the technology introduction more costly.
- Remove restrictive laws to interconnection of CSP plants to allow more cost-effective connection to the electric grid.

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Financing Mechanisms

- Ensure that the Kyoto instruments such as CDM and JI are applicable to CSP and are bankable.
- Institute production tax credits similar to those wind power now enjoys which stimulated the growth of wind power in some countries.
- Maintain investment tax credits to support the initial capital investments before CSP plants begin to produce power.
- Establish loan guarantee programs

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Different Countries Have Different Conditions

- To account for the differences between countries in the development of CSP-related policy instruments and in the intensity of their solar resource, three different regional strategies have been defined for the CSP GMI

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Different Strategies for Different Regions
Region I

- Region I includes countries and states where most of the required policy elements of the GMI already exist or could reasonably be expected.
- Countries in Region I include those in southern Europe (e.g. Spain), southwestern United States (e.g. Nevada) and Israel.
- Existing CSP-specific targets with feed-in laws or public benefit charges, both of which rely on the ratepayers, are used to cover the initial price gap.
- Political support is still needed to make targets, policies and tariffs stable and predictable so that commercial financing can be secured.

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Different Strategies for Different Regions
Region II

- Region II includes developing countries that are or will soon be connected to Region I countries by a power grid.
- Region II includes, for example, Algeria, Morocco and Mexico.
- Power from CSP plants built in these countries (higher solar radiation) may be sold to Region I countries and could receive a premium price.
- Political initiative is primarily needed for formulating a fair scheme that accounts for both improved tariffs for clean energy generated in the Region II countries and for allowing a benefit from enhanced feed-in tariffs on electricity that is imported into Region I.

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→ **source:** Presentation to the Euro-Mediterranean Ministerial Meeting of May 2003.

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Different Strategies for Different Regions
Region III

- Region III includes developing countries not interconnected to the grid of Region I countries.
- Countries in Region III include Brazil, Egypt, India, Iran, Jordan and South Africa.
- Preferential financing in the form of subsidies (which could be grants, soft loans, carbon credits, CDM or green premiums) provided by Region I sources will be required to support the Region III countries' desire for development of clean CSP plants.
- In the medium term, the Region III countries will benefit from the closing of the price gap as a result of growing installed CSP capacity in Regions I and II.

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Renewables 2004 Conference, Bonn, Germany June 2004

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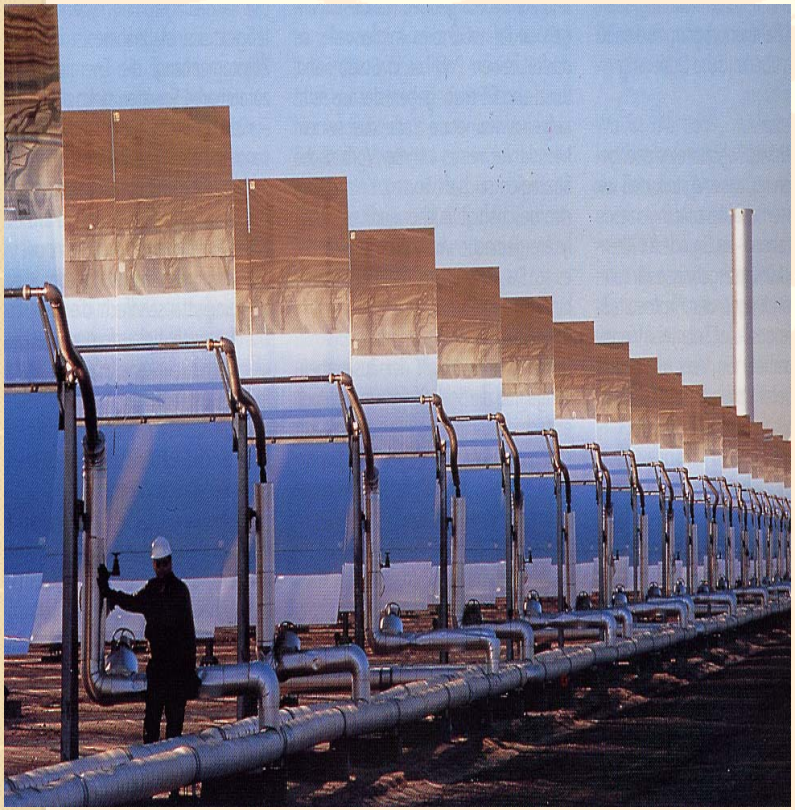
The CSP GMI was included in the International Action Program of the Renewables'04 Conference in Bonn



■ The following countries have endorsed the CSP GMI, intend to participate in it and support the inclusion of the CSP GMI in the Action Program of this Conference:

- Algeria
- Germany
- Israel
- Spain
- Egypt
- Italy
- Morocco

■Additional countries and states are expected, and are welcome, to join the CSP Global Market Initiative.

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GMI Signing Ceremony, Bonn, Germany June 2004

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Next Steps

- Form an Advisory Council of participating countries and states within the IEA SolarPACES Program
- Formalize management group
- Approve action plan and budget
- Begin work to accelerate CSP projects in participating countries and states, e.g., the 1000 MW CSP Initiative in the SW

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Message to 154 Countries: If Your Country Wants to Develop Its Solar Energy Resource, Consider Concentrating Solar Power; The Option for Large Scale Solar Electricity

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